



Vertical residential wind turbine

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Wind now accounts for 7.2% of power generated in the United States, and IceWind says that will be around 20% in less than a decade, by 2030. But most of that is the huge horizontal turbines you see in commercial wind farm applications with blades the length of a 747. All green energy is good -- although there are concerns with bird loss -- but it's hardly something a homeowner can install.

"What we have designed over at IceWind is actually a vertical axis wind turbine," Samuel Gerbus, one of IceWind's mechanical engineers, told me recently on the TechFirst podcast. "The large difference is those big turbines, when wind comes from different directions you either need to use a gearbox to change those blades to face that wind direction, or stop them and change it. Vertical axis wind turbines are omni-directional. We can take wind from any direction."

In addition, the design is safer for home installation -- no huge whirling propellor-like blades -- and "completely safe" for birds, the company says. They're also quiet: under 30 decibels of noise.

You can't power your entire house off of one Freya. It will only provide about 150 to 200 watts in about 25 mph winds, Gerbus told me. So you'll need multiple to power the typical larger U.S. home. (Drew Gertz, an engineer at Northwind Engineering, says you'd need six, even if wind speeds remain continuously at 25 mph, and likely more since that's unrealistic.)

Gerbus wouldn't provide specifics on the payback period, but said that most renewable energy investments pay back your initial cost in five to ten years. Gertz, the engineer from Northwind, finds that very optimistic, however, for a small system.

(I don't think Tesla's solar roof falls into that category, but it also does provide a roof, which you need in any case. Tesla solar roofs can cost about \$25,000 after federal rebates for a ten kilowatt system.)

Right now, Freya makes the most sense for supplementary purposes, unless you're in an extremely windy location, or you want to go all-in with multiple turbines. It's also a great additional component to a mixed energy source system.

Get the full transcript of our conversation [here](#).

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Web: <https://www.hollanddutchtours.nl/contact-us/>

Email: energystorage2000@gmail.com

WhatsApp: 8613816583346

